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Rural Commuting: Its Relevance to Rural and Urban Labour Markets

Spencer Harris, Alessandro Alasia and Ray D. Bollman, Statistics Canada

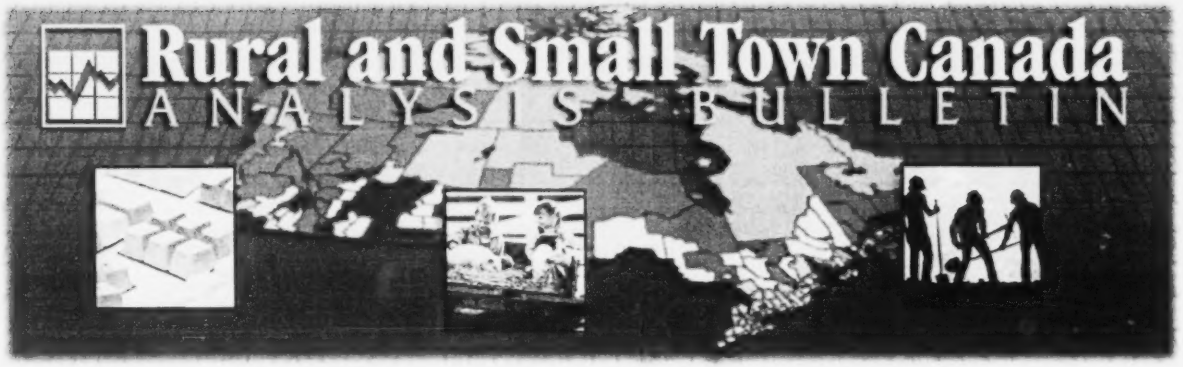
Highlights

- **Rural commuters are as dependent upon rural-based jobs as they are upon urban-based jobs.**
- **The rural labour pool is not a major supplier of workers to urban-based jobs with only 4% of urban jobs being filled by rural residents. However, these urban-based jobs account for 16% of the rural workforce.**
- **Urban workers form a small but still sizable share of rural-based employment. About 7% of rural-based jobs are filled by workers who live in urban areas. However, these rural-based jobs only provide employment for 1% of urban workers.**

Introduction

For most people, the word "commuter" brings to mind someone who leaves home in the morning to travel downtown to work and who makes the return trip in the evening – in other words, someone who lives in the periphery and works in the urban core. Research on commuting within Canada's major cities (CMAs) indicates that although this remains a common trend, the commuting flows are becoming more complex with increasing periphery-to-periphery flows (Heisz and LaRochelle-Côté 2005).

Various studies have focused on rural commuting, (Schindegger and Krajasits 1997; Green and Meyer 1997; Mitchell 2005), but outside major agglomerations the understanding of the multidirectional nature of commuting patterns is currently more limited. This bulletin is a first attempt to assess the multi-directional nature of commuting patterns in rural areas. We show that commuting patterns, and specifically rural commuting patterns, are more complex than a simple core-periphery approach, typically depicted as a set of circles centered on an urban core, would suggest.



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The following standard symbols are used in this Statistics Canada publication:

.	not available for any reference period
..	not available for a specific reference period
...	not applicable
0	true zero or a value rounded to zero
0^s	value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
^{p}	preliminary
^{r}	revised
x	suppressed to meet the confidentiality requirements of the *Statistics Act*
^{E}	use with caution
F	too unreliable to be published

One of the main findings of this analysis is that, among Canada's rural and small town residents, rural-to-rural commuting is as important as rural-to-urban commuting. In other words, rural commuters are as dependent on rural labour markets as they are on urban labour markets. Commuting flows out of communities tend to be multidirectional and do not merely follow a periphery-to-core flow.

This bulletin presents baseline data on the pattern and size of rural commuting flows in 2001 and provides a better understanding of how rural communities are affected by both urban-bound commuters and rural-bound commuters. It also shows that Canada's Census Metropolitan Areas and Census Agglomerations (larger urban centres), which are delineated on the basis of commuting flows, essentially constitute self-contained labour markets. Overall, only 4% of the jobs in these urban areas are filled by people commuting in from rural areas. The remaining 96% are jobs being filled by residents of the urban areas themselves.

The data used in this analysis comes from the 2001 Census of Population. Census Sub-Divisions (CSDs) (Box 1) are classified as either part of a Larger Urban Centre (LUC) or part of a Rural and Small Town (RST) area. The methodological challenges caused by the multidirectional nature of commuting flows (discussed in Box 2 and 3) should be kept in mind by the readers when interpreting the results.

We acknowledge that the use of different census geographies and different definitions of commuting would, to some extent, modify these results. Nonetheless, the existing research that focused on commuting flows within CMAs has also shown the increasing complexity of commuting flows within these urban delineations, as well as the rapid growth of periphery-to-periphery flows. Hence, the overall findings presented in this bulletin highlight trends that should be considered in any further research on rural commuting and rural labour markets.

This work complements and adds to existing research which has highlighted the increasing complexity of commuting flows within Canada's urban areas, particularly the rapid growth of commuting from one part of the periphery of the urban area to another part of the periphery as opposed to commuting from the periphery to the centre. This analysis is also a first step toward the identification and profiling of rural labour markets.

Box 1 Data source

The data used for this analysis are derived from the Census of Population 2001 and are aggregated at the Census Sub-Division (CSD) level. For each pair of CSDs for which a commuting flow is recorded, the database reports the total flows and the flows for each gender. Data on geographic location of a CSD (coordinates of the geographic centre) and the classification of a CSD according to the type of area (MIZ codes) are from Statistics Canada (2002b).

For more detail on the place of work and place of residence data, see Statistics Canada (2002a).

Box 2 Definitions: Commuting

For the purpose of this analysis, a **commuter** is defined as an individual who reports a place of residence in one Census Subdivision (CSD) and a place of work in a different CSD that is less than 250 km from the place of residence. The data on place of work and place of residence come from the long questionnaire from the Census of Population. Since the long questionnaire only enumerates one-fifth of households, confidentiality and reliability issues mean that the estimation of commuter flows of less than 20 commuters between any two CSDs (i.e. for a sample of less than 4 commuters) have been excluded. The focus of this analysis is on the nature of labour markets as connected by daily commuting; for this reason the definition of commuter was limited to anyone who works within 250 kilometers of his/her place of residence. Specifically, we include in our database only the commuting flows between each pair of CSDs whose geographic centres are less than 250 km apart. In simple terms, if the geographic centre of two municipalities is more then 250 km apart, a possible commuting flow between these municipalities is not considered as daily commuting for the purpose of this analysis.

It should be noted that this distance threshold (250 km) excludes only 0.7% of the total flows of commuters available in the original database. In other words, 99.3% of the commuters in the original database have a place of residence and a place of work that are located in two municipalities less than 250 km apart. Individuals who live and work in municipalities more than 250 km apart are a marginal group which might include individuals who are working at a temporary or seasonal worksite, but who still report their original place of residence in the Census or those "fly-in and fly-out" workers who have a place of residence that is different from a place of work. Examples include miners or construction workers who fly into a worksite for 7 or 10 days and then fly out of the worksite for a number of days.

It should also be noted that the definition of commuting used here implies that the worker is crossing CSD boundaries when traveling to work. Hence, this definition does not include those individuals who travel to work within the boundaries of the same CSD but who might still travel a relatively long distance to work. On the other hand, this definition would include individuals who travel a short distance but cross a CSD boundary. The goal of this analysis is to account for multidirectional flows (*from-to*). This requires that a continuous space be broken down into discrete geographic units. In turn, this results in some degree of approximation of the real commuting flows.

Based on our definition of commuting, out of a national workforce of approximately 14.7 million, there are approximately 4.8 million workers who commute. That means that 4.8 million workers cross the boundary of a CSD as they travel to work. In 2001, approximately 8% of workers worked at home (Statistics Canada, 2003). Other workers travel to get to work but they do not cross a CSD boundary.

Out-commuters and out-commuting are used to refer to the commuting flows from the perspective of the municipality from which the flow is generated. Hence, the percent of out-commuters is calculated with respect to the workforce or commuting flow of the area that generates the flows. **In-commuter and in-commuting** are used to refer to the commuting flows from the perspective of the municipality that receives the flow. Hence, the percent of in-commuters is calculated with respect to the workforce or commuting flow of the area that receives the flow.

Box 3 Definitions: Geography

A **Census Sub-Division** (CSD) is a municipality (i.e. incorporated town, rural municipality, city, etc. determined by provincial legislation) or its equivalent such as Indian reserves, Indian settlements, and unorganized territories. In the 2001 Census of Population there were 5,600 CSDs. For a detailed description of a CSD, see Statistics Canada (2002a). CSDs can vary tremendously in terms of population size – from a few residents to over 2 million residents in Toronto. Also, the geographic spread of a CSD can vary widely – from less than 1 square kilometre for a small rural town to large geographic expanses of so-called "unorganized" territories in northern parts of many provinces. CSD level data are aggregated into types of areas according to Statistics Canada's Statistical Area Classification.

Larger urban centres (LUCs) are composed of CSDs classified as part of Census Metropolitan Areas (CMAs) and Census Agglomerations (CAs). In 2001, a CMA was defined as having an urban core of 100,000 or more and included all neighbouring CSDs were 50% or more of the resident workforce commuted to the urban core of the CMA. A CA had an urban core of 10,000 to 99,999 and also included neighbouring CSDs where 50% or more the resident workforce commuted to the urban core of the CA.

- **Larger CMAs** are CSDs delineated as part of a CMA with a total population of 500,000 or more. In 2001, this included Quebec, Montreal, Ottawa-Gatineau, Toronto, Hamilton, Winnipeg, Calgary, Edmonton and Vancouver.
- **Smaller CMAs** are CSDs delineated as part of a CMA with a population of 100,000 to 499,999.
- **CAs** are CSDs delineated as part of a Census Agglomeration with a population of 10,000 to 99,999.

Rural and small town (RST) areas are CSDs which are not part of a CMA or CA. RST are further classified into a Metropolitan Influenced Zone (MIZ), as follows:

- **Strong MIZ**: CSDs in a RST area where 30% or more of the resident workforce commutes to any CMA or CA;
- **Moderate MIZ**: CSDs in a RST area where 5% to 29% of the resident workforce commutes to any CMA or CA;
- **Weak MIZ**: CSDs in a RST area where more than zero but less than 5% of the resident workforce commutes to any CMA or CA; and
- **No MIZ**: CSDs in a RST area where none of the workforce commutes to a RST area (or the workforce is less than 40 workers).

The definitions of LUC and RST are based on commuter activity *into a CMA or CA*. Thus, the amount of commuter activity into a CMA or CA and the type of MIZ to which a CSD is assigned are directly correlated. For this same reason, *some of the results* presented in this analysis are simply confirming the commuting flows that are used to generate this classification. On the other hand, the MIZ classification does not assess the flows that occur between different MIZ categories or within the same MIZ category. This is where the results of this analysis are most revealing. In this study, the classification of CMA and CA is based on total population of the agglomeration rather than the population in the urban core. Any agglomeration with total population greater than 100,000 is classified as a CMA; hence, the category "smaller CMA" includes 7 CAs with an urban core population less than 100,000 but with a total population greater than 100,000. Also, for practical purposes, 16 non-CA CSDs in the Territories, with small commuting flows to a CA in the Territories, were assigned to the Strong MIZ class. However, many of these were excluded in the analysis because the commuting flow involved less than 20 people and/or the distance they travelled was 250 km or more.

Does the definition of rural have an impact on the results? The geography used in this analysis has certain implications for the results. As mentioned above, the geographic definition is itself based on a specific trajectory of commuter activity. Alternative definitions of rural could generate different insights. For instance, an alternative definition is that of "census rural" which refers to the population outside centres of 1,000 or more inhabitants and outside areas with a population density of 400 or more inhabitants per square kilometre (du Plessis *et al* 2001). Each CSD may have some census rural areas and some census urban areas. Essentially, "census rural" is the countryside within each CSD. In the 1991 to 2006 period, more than one-third of Canada's "census rural" residents lived in a CSD that is delineated as part of a CMA or CA (Bollman and Clemenson, forthcoming). Thus, the use of "census rural" and "census urban" areas would capture multidirectional commuting flows within a CSD (rural-urban, rural-rural, etc). Specifically, given the definition of rural used, the rural-to-rural commuting presented in this analysis includes the flows between very small municipalities and towns with up to 10,000 inhabitants.

For details on the definitions outlined above see McNiven et al. (2000) and Statistics Canada (2002a).

Where are the workers and where are the jobs?

In 2001, out of 14.7 million workers, 2.8 million resided in rural and small town (RST) areas. Of these 2.8 million, about 2.3 million also worked in a RST area, but not necessarily in the municipality where they were living (Table 1). Meanwhile, approximately 0.4 million commuted to a municipality in a larger urban center (LUC).

Rural and small town workers were not a major contributor to jobs located in the labour market of larger urban centres. In 2001, about 96% of urban jobs were filled by LUC residents, either living in the same municipality or commuting from another LUC municipality. Less than 4% of urban jobs were filled by commuting RST residents. However, because of the difference in the size of the population in LUC and RST areas, the 0.4 million workers that constituted the 4% of urban jobs represented 16% of all workers residing in RST areas. Thus, the urban labour market was relatively important for RST workers, but these workers were less important in terms of filling urban jobs.

In 2001, there were nearly 164,000 commuters going from a LUC municipality to a municipality in a RST area. These workers represented only a little over 1% of the workers residing in LUCs but they filled approximately 7% of the jobs in RST areas. Hence, in aggregate terms, the rural jobs were of marginal importance to urban workers but the urban workers were somewhat more important for filling rural jobs.

Table 1 Distribution of workers by place of residence and place of work, Canada, 2001

Place of residence	Workers by place of work		
	Larger urban centres	Rural and small town areas	All areas
	number		
Larger urban centres	11,753,460	163,740	11,917,200
Rural and small town areas	443,605	2,334,325	2,777,930
All areas	12,197,065	2,498,065	14,695,130
	Distribution by place of work		
	row percent		
Larger urban centres	98.6	1.4	100.0
Rural and small town areas	16.0	84.0	100.0
All areas	83.0	17.0	100.0
	Distribution by place of residence		
	column percent		
Larger urban centres	96.4	6.6	81.1
Rural and small town areas	3.6	93.4	18.9
All areas	100.0	100.0	100.0

Note: The place of residence is defined as the location of the worker and the place of work as the location of the job. The table shows figures for all workers (both commuters and non-commuters). For instance, the value of 11,753,460 includes both commuters between Census Sub-Divisions (CSDs) of the same type of area as well as individuals who live and work in the same Census Sub-Division (CSD). For a definition of commuting used in this analysis see Box 2.

Source: Statistics Canada, Census of Population, 2001.

The big picture: Rural and urban commuters

In 2001, approximately 4.8 million individuals, or one-third of the Canadian workforce, crossed a municipal boundary in their travel to work (Table 2). Most of these commuted a relatively short distance. According to Statistics Canada (2003), only 13% of commuters travelled more than 25 km to work (this number does include commuters who remained within the same municipality).

With over 80% of the Canadian population living in LUCs in 2001 (Bollman and Clemenson, forthcoming), it is not surprising that most of the commuting was concentrated in and around urban centres. In 2001, about 3.8 million commuters travelled between urban jurisdictions. These represented 78% of all commuters in Canada. The remaining 22% of commuters (just over 1 million workers) represented all other regional flows (urban-to-rural, rural-to-urban or rural-to-rural).

Only approximately 164,000 people, or 4% of commuters who resided in a LUC, travelled to a municipality in a RST area for work (Table 2 and Figure 1). This vividly illustrates the extent to which Canadian LUCs represent self-contained labour markets.

Among commuters residing in RST areas, slightly over half (447,000) were going to another RST municipality. These RST residents, therefore, contributed to the economy of other rural areas. In comparison, approximately 444,000 workers commuted from a rural and small town to a larger urban area. This suggests that rural-to-rural commuting accounted for a significant proportion of the labour supply in Canada's RST areas.

These results indicate that when it comes to workers commuting from a RST area, rural jobs were just as important as urban jobs. This challenges the prevailing idea that commuting essentially involves travelling from a rural residence to a job in the city.

Table 2 Distribution of commuters by place of residence and place of work, Canada, 2001

Place of residence	Commuters by place of work		
	Larger urban centres	Rural and small town areas	All areas
	number		
Larger urban centres	3,765,950	163,740	3,929,690
Rural and small town areas	443,605	447,000	890,605
All areas	4,209,555	610,740	4,820,295
	Distribution by place of work		
	row percent		
Larger urban centres	95.8	4.2	100.0
Rural and small town areas	49.8	50.2	100.0
All areas	87.3	12.7	100.0
	Distribution by place of residence		
	column percent		
Larger urban centres	89.5	26.8	81.5
Rural and small town areas	10.5	73.2	18.5
All areas	100.0	100.0	100.0

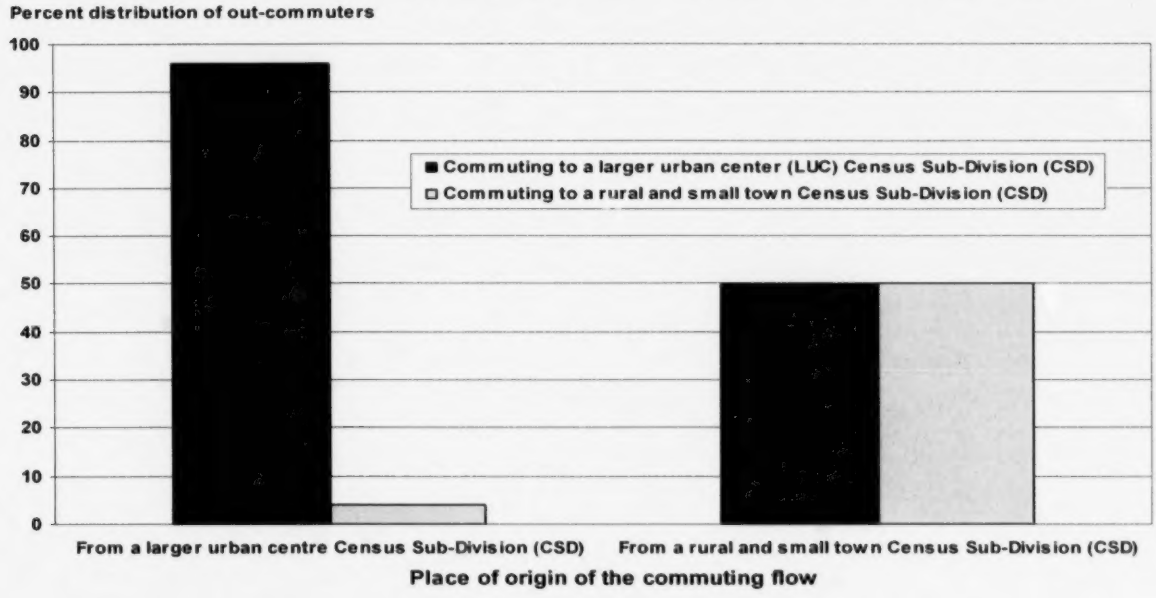
Note: The place of residence is defined as the location of the worker and the place of work as the location of the job. The table shows only those commuting. It includes those commuting between Census Sub-Divisions (CSDs) in the same type of area. For instance, there are 447,000 individuals commuting from a rural and small town Census Sub-Division (CSD) to another rural and small town Census Sub-Division (CSD). For a definition of commuting used in this analysis see Box 2.

Source: Statistics Canada, Census of Population, 2001.

There is reason to believe that the commuting pattern that emerges from these results would also hold for alternative definitions of rural. In particular, research that focuses on commuting patterns within CMAs points to the increasing complexity of commuting patterns within metro agglomerations. Heisz and LaRochelle-Côté (2005) showed that between 1996 and 2001, the relative economic importance of inner cities declined as the number of jobs in the suburbs increased at more than four times the pace compared to those in the core urban areas. As a result, more and more people commuted cross-town to these suburban areas. From 1981 to 2001, the number of workers travelling to the suburbs increased 74% to 1.8 million, while those commuting to the city core rose only by 28% to 1.3 million (Statistics Canada, 2003). Of those who commuted to the surrounding municipalities in 2001, about two-thirds came from another surrounding municipality and one-third from the core urban municipality. The 1.2 million workers commuting from one suburban municipality to another in 2001 represent a 91% increase between 1981 and 2001.

Because the majority of child-rearing and house-keeping responsibilities still seem to fall to females, it might be expected that fewer females would commute and that those who do commute would commute smaller distances. In terms of commuting share, for almost all source/destination combinations, both females and males differed by only a few percentage points from the overall commuter shares although female commuting rates tended to be higher between CSDs in the same type of area. The results show that there were approximately 400,000 more males commuting in Canada than females (2.6 million males compared to 2.2 million females) (Appendix Tables A8 and A9). However, their overall patterns are similar.

Figure 1 One-half of the commuters from a rural and small town Census Sub-Division (CSD) are bound for another rural and small town Census Sub-Division (CSD), Canada, 2001



Note: A Census Sub-Division (CSD) is an incorporated town or municipality. See Box 2 for a definition of commuting.
Source: Statistics Canada, Census of Population, 2001.

Looking more closely: Commuting in different parts of rural and urban Canada

In order to probe more deeply into commuting flows by type of area, Metropolitan Influenced Zones (MIZ) are used to differentiate between various RST areas. In addition, Canada's cities (LUCs) are divided into Larger CMAs, Smaller CMAs, and CAs (Box 3).

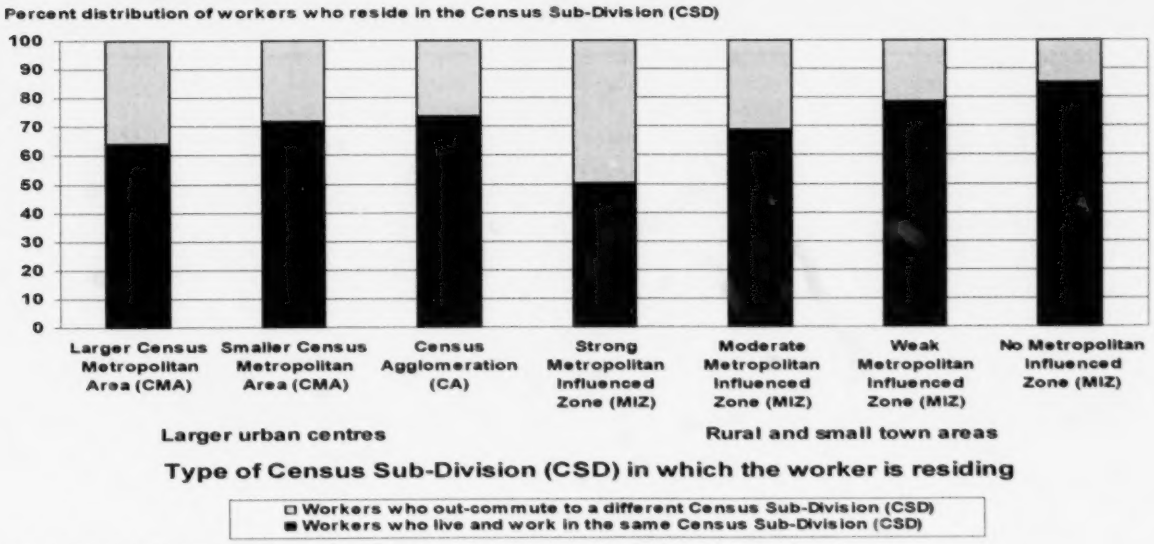
Overall, the share of people who commute was similar for LUCs and RST areas (Appendix Table A5). With the exception of Strong MIZ, each type of region had less than 40% of workers employed in a different CSD to the one in which they live (Figure 2). Approximately 50% of workers residing in Strong MIZ commuted across a CSD boundary.

Municipalities in Strong MIZ are more likely to act as "feeder" communities, providing workers for urban areas. There are 4,605 municipalities in RST areas of Canada (Appendix Table A1) and of these, 663, or 14%, are in Strong MIZ. However, these municipalities contain almost 750,000 workers (Appendix Table A2) or 27% of the total RST workforce.

Municipalities within larger CMAs had a higher share of commuters than municipalities within smaller CMAs, which in turn had a higher share than in CAs. Larger CMAs typically contain many municipalities but relatively few have major employment sites. The remaining municipalities are mainly residential areas.

There is also a discernable pattern in RST areas. As one moves from municipalities in Strong MIZ to Moderate MIZ to Weak MIZ to No MIZ, relatively fewer workers commute. Again, this result points to the "feeder" role of Strong MIZ which, in an aggregate regional perspective, appears to reflect the idea of a "bedroom community" more than any other type of region.

Figure 2 In each type of area, except for Strong Metropolitan Influenced Zone (MIZ), over 60% of resident workers are employed within their Census Sub-Division (CSD) of residence, Canada, 2001



Note: A Census Sub-Division (CSD) is an incorporated town or municipality. See Box 2 for a definition of commuting.
Source: Statistics Canada, Census of Population, 2001.

Out-commuting: Where are rural and urban commuters going?

In this section we look specifically at out-commuting flows toward various types of communities, as a share of total out-commuting from the community of origin.

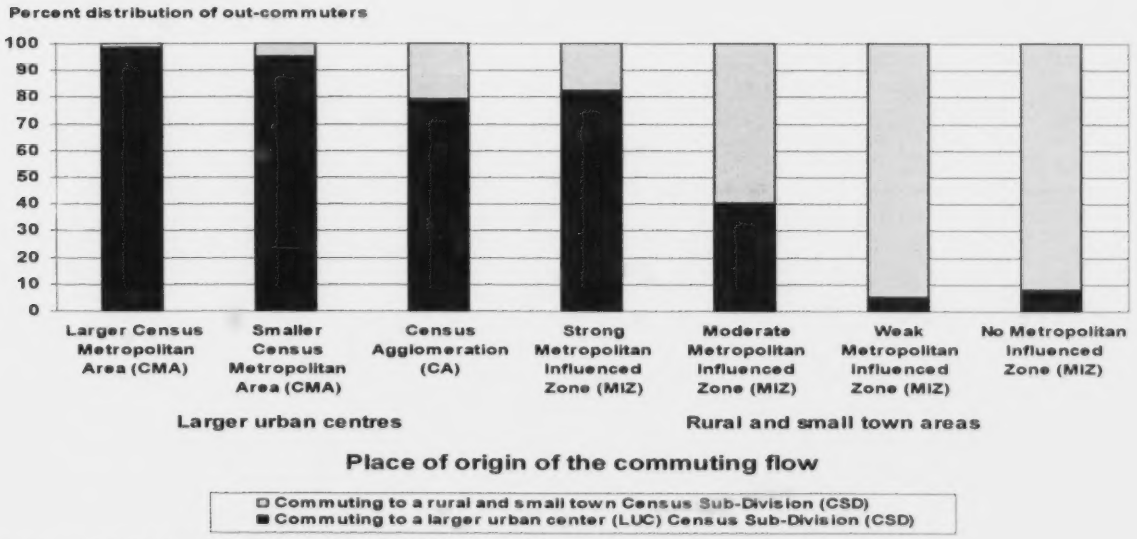
In both larger and smaller CMAs, the share of out-commuters who travel to rural and small town (RST) was fairly insignificant (Figure 3). In addition, the absolute number of commuters is relatively small (Appendix Table A3). However, a much higher proportion (21%) of out-commuters in CAs travel to a municipality in a rural and small town area (Figure 3 and Appendix Table A4).

Not surprisingly, municipalities within Strong MIZ were the most common destination for the out-commuters from a LUC area (Figure 4). However, Moderate MIZ was only a few percentage points behind Strong MIZ in this regard (and even tied with Strong MIZ in the case of commuting from larger CMAs).

Among rural and small town areas, Strong MIZ municipalities had the most prevalent out-bound commuting relationship with urban areas (Figure 3). More than 80% of out-commuters residing in Strong MIZ travelled to a LUC municipality. This finding is essentially due to the validity of the MIZ classification which is based upon urban-bound commuting.

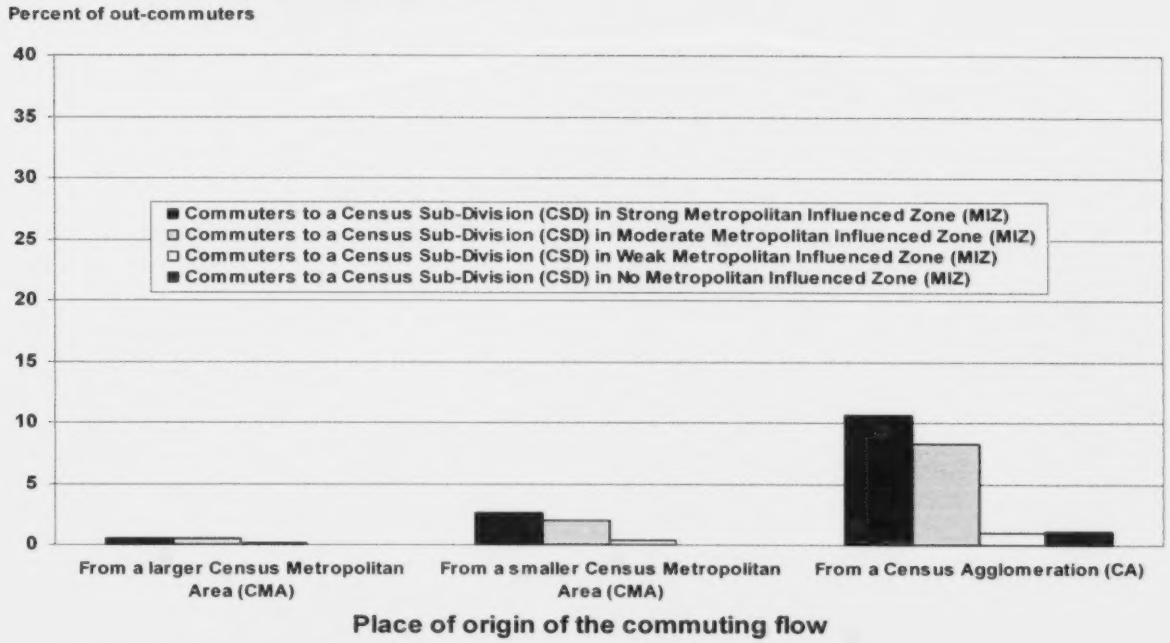
The picture is considerably different beyond Strong MIZ. In municipalities in Moderate MIZ areas, about 40% of out-commuters travelled to a LUC municipality for work, while 60% travelled to another RST municipality. Less than 10% of Weak and No MIZ out-commuters travelled to a LUC municipality for work while over 90% went to another RST municipality.

Figure 3 In larger urban centres, up to 20% of out-commuters travel to a rural and small town Census Sub-Division (CSD) while in Moderate Metropolitan Influenced Zone (MIZ), about 60% of out-commuters travel to another rural and small town Census Sub-Division (CSD), Canada, 2001



Note: A Census Sub-Division (CSD) is an incorporated town or municipality. See Box 2 for a definition of commuting.
Source: Statistics Canada, Census of Population, 2001.

Figure 4 Urban to rural flows: For each type of larger urban centre, the share of out-commuters to Strong Metropolitan Influenced Zone (MIZ) and to Moderate Metropolitan Influenced Zone (MIZ) is similar, Canada, 2001



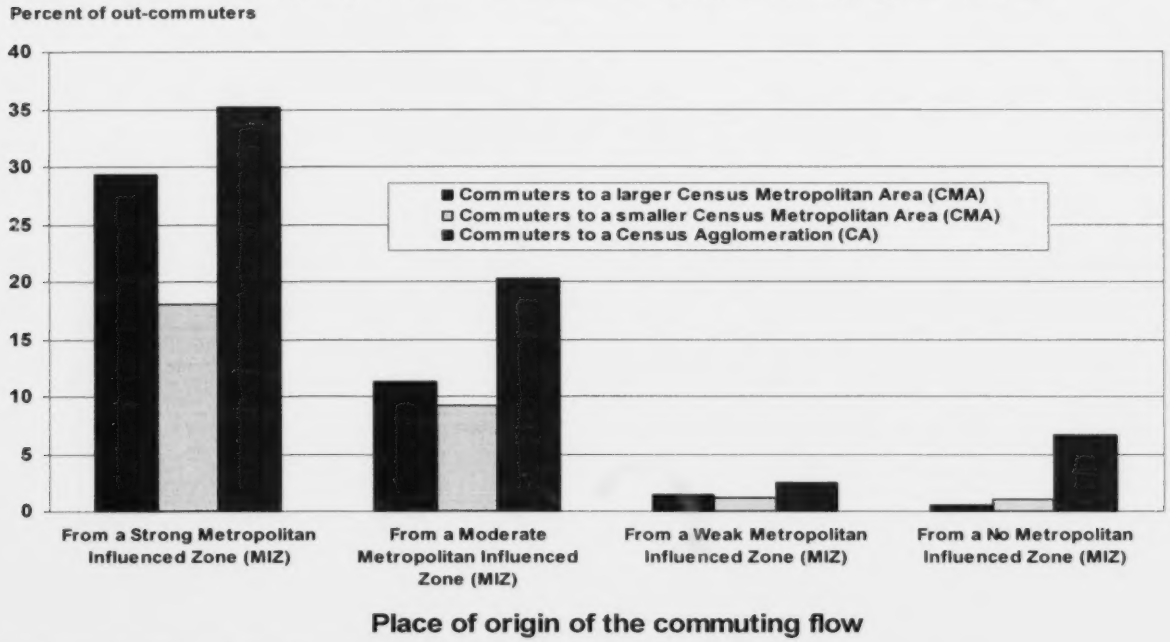
Note: A Census Sub-Division (CSD) is an incorporated town or municipality. See Box 2 for a definition of commuting.
Source: Statistics Canada, Census of Population, 2001.

Census agglomerations (i.e., urban areas with 10,000 and 99,999 residents) were the most frequent destination among RST residents who out-commuted to a LUC (Figure 5). Commuters who resided in municipalities in Strong MIZ, Moderate MIZ and Weak MIZ were more apt to travel to a Larger CMA for work than to a Smaller CMA.

In Moderate MIZ and Weak MIZ, those doing a rural-to-rural commute tended to go to another municipality with the same MIZ classification (Figure 6). For instance, 36% of out-commuters from a municipality in a Moderate MIZ travelled to another Moderate MIZ municipality. This was even more evident for municipalities in Weak MIZ where over 70% of their out-commuting workforce travelled to another Weak MIZ municipality. These commuting flows suggest strong rural-to-rural economic linkages.

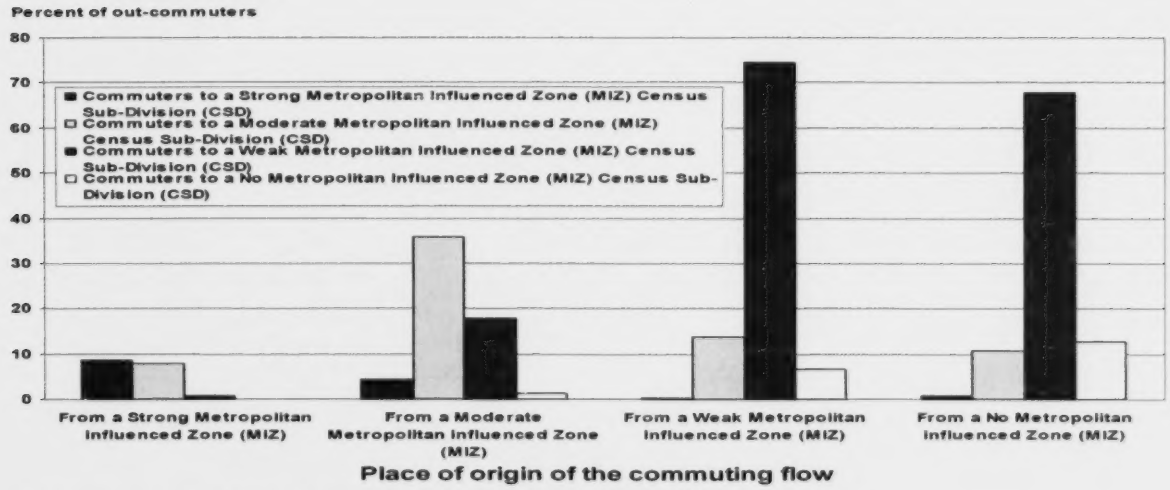
Rural-to-rural commuters in Strong MIZ were almost as likely to travel to a municipality in Moderate MIZ as to one in Strong MIZ. Hence, unlike the other types of MIZ, out-commuters from Strong MIZ do not appear to have a single dominant RST destination. This again points to the "bedroom" or "frontier" nature of Strong MIZ communities, which have typically high out-commuting flows toward different types of regions. Finally, rural-to-rural commuters in No MIZ typically travelled to a Weak MIZ municipality. No MIZ municipalities are often surrounded by a Weak MIZ. This is especially the case for those No MIZ municipalities that are Indian reserves.

Figure 5 Rural to urban flows: Out-commuters from a rural and small town area to a larger urban centre are most likely to commute to a Census Agglomeration (CA), Canada, 2001



Note: A Census Sub-Division (CSD) is an incorporated town or municipality. See Box 2 for a definition of commuting.
Source: Statistics Canada, Census of Population, 2001.

Figure 6 Rural to rural flows: About 70% of out-commuters from a Weak Metropolitan Influenced Zone (MIZ) and No Metropolitan Influenced Zone (MIZ) Census Sub-Division (CSD) commute to a Weak Metropolitan Influenced Zone (MIZ) Census-Sub Division (CSD) Canada, 2001



Note: A Census Sub-Division (CSD) is an incorporated town or municipality. See Box 2 for a definition of commuting.
Source: Statistics Canada, Census of Population, 2001.

In-commuting: Who is filling rural and urban jobs?

In this section we focus on the share of total employment within an area that is taken by in-commuters. Thus, the question is: where are the in-commuters that fill rural and urban jobs coming from?

The share of local jobs that are filled by in-commuting is particularly high for Larger CMAs (38%), and Smaller CMAs and CAs (almost 30%) while it is close to 25% for Strong MIZ, Moderate MIZ and Weak MIZ (Figure 7). It is particularly low for No MIZ (about 16%). However, whether the in-commuters mainly stem from rural or urban areas depends on the type of area. Figure 7 differs from Figure 2 because in the former the shares refer to the workforce that *work* in the area, while in the latter the shares refer to the workforce that *reside* in the area.

When we look at urban labour markets, are there many in-commuters from rural and small town areas filling urban jobs? Although there is some difference among LUCs, the share of rural in-commuting is generally low. Municipalities in CAs had a larger portion of their total jobs filled by in-commuters from RST areas, about 11% (Appendix Table A7). In contrast, only 4% of jobs in Smaller CMAs, and less than 2% of jobs in Larger CMAs, were filled by in-commuters from RST areas.

Within RST areas, the share of jobs taken by in-commuters is generally lower than that seen in LUC municipalities (Figure 7 and Appendix Table A7). Furthermore, Strong MIZ is the only rural and small town area that had a majority of commuters that came from municipalities in LUCs. About 16% of the jobs in Strong MIZ municipalities were filled by commuters from a LUC municipality compared to 9% that were filled by commuters from a RST CSD.

For other types of rural and small town areas, the majority of in-commuting emanated from other municipalities within RST areas. Once again, this reflects the strong rural-to-rural linkages which tend to be obscured by an analysis of commuting that focuses primarily on urban-to-rural flows. Roughly 20% of the jobs in Moderate and Weak MIZ municipalities are filled by workers that came from another municipality in a RST area (Figure 7).

In Strong MIZ, more jobs were taken by commuters from LUC municipalities than by commuters from any other type of area. In contrast, in Moderate and Weak MIZ more jobs were taken by commuters from a municipality of the same MIZ category than by commuters from any other type of area. The linkage between Strong MIZ municipalities and other MIZ categories (even with other Strong MIZ CSDs) is small compared to the linkage with LUC municipalities.

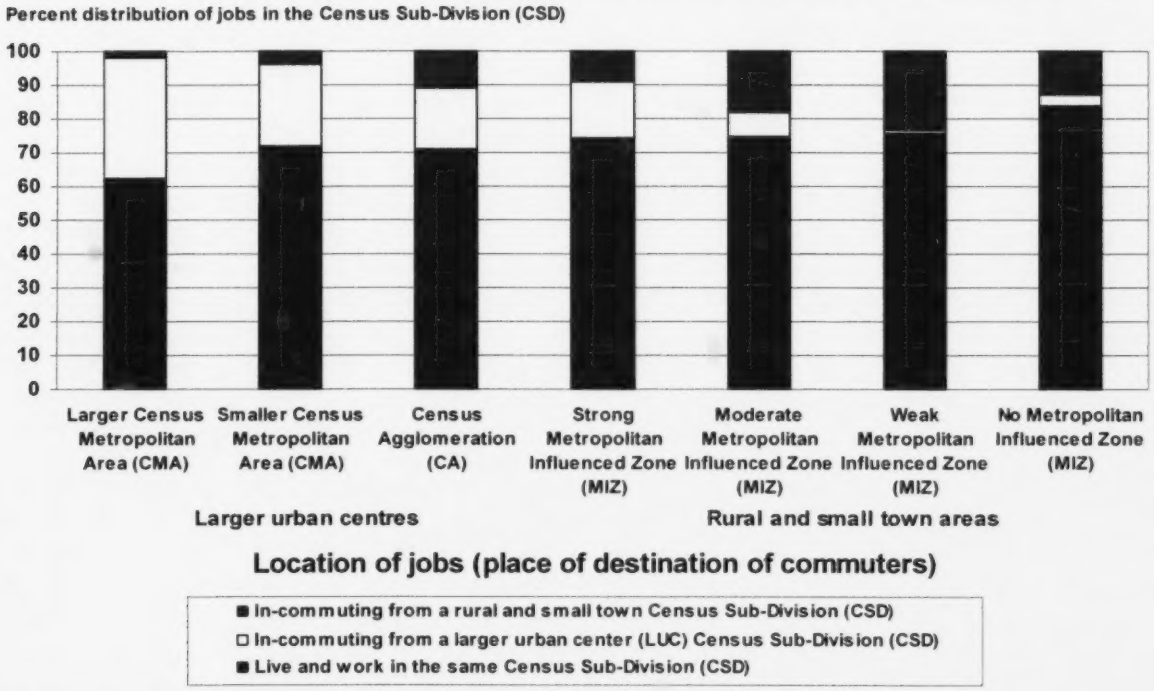
In Strong MIZ municipalities, only about 3% of the jobs were filled by commuters from a Moderate MIZ; similarly, within Moderate MIZ municipalities, only about 3% of the jobs were filled by commuters from a Strong MIZ (Figure 8). Thus, Moderate, Weak and No MIZ municipalities not only have a low degree of integration with LUC municipalities, they are also relatively less integrated with Strong MIZ municipalities.

Census Agglomerations are the main departure point of LUC commuters who travelled to RST areas (Figure 9). With the exception of Weak MIZ, a considerably larger share of workers in each type of rural and small town area travelled from a CA than from either a smaller or larger CMA. In general, it was the Strong MIZ municipalities which were most affected by commuters from a LUC municipality.

Over 16% of the people who worked in Strong MIZ municipalities travelled from a LUC

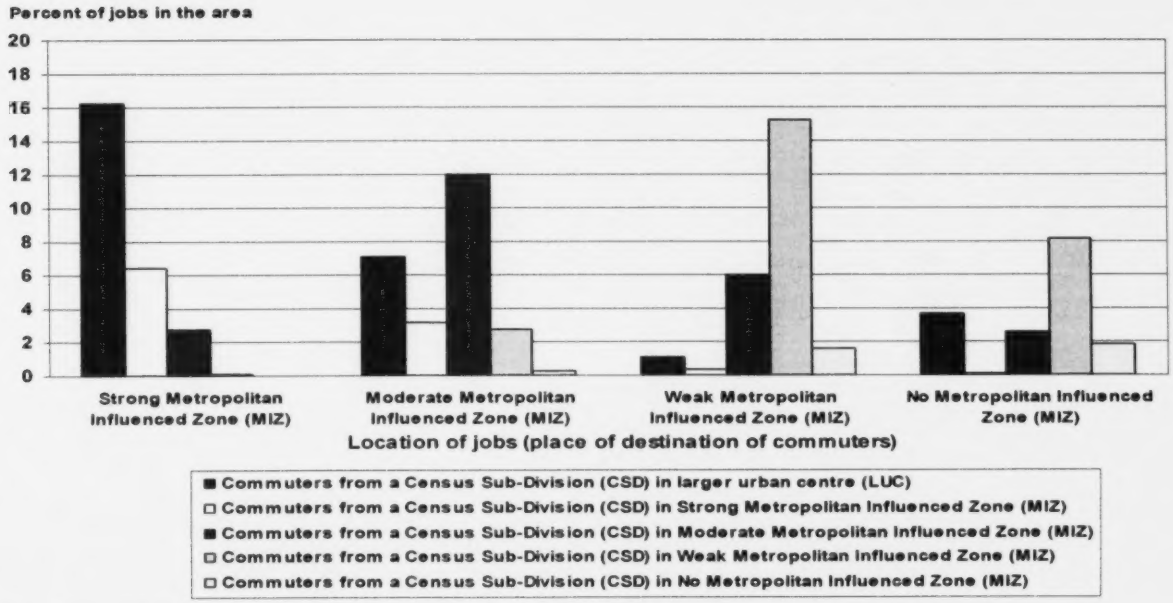
municipality – of these well over half were in-commuting from a CA (Figure 9). The equivalent share for Moderate MIZ, the next closest regional type, was approximately 7%. It should be noted, however, that the MIZ classification is based on the size of commuting to any CMA or CA and thus so-called reverse commuting from a CMA or CA to Strong MIZ municipalities may be expected.

Figure 7 In rural and small town areas, three-quarters of the jobs in any Census Sub-Division (CSD) are filled by residents of that same Census Sub-Division (CSD), Canada 2001



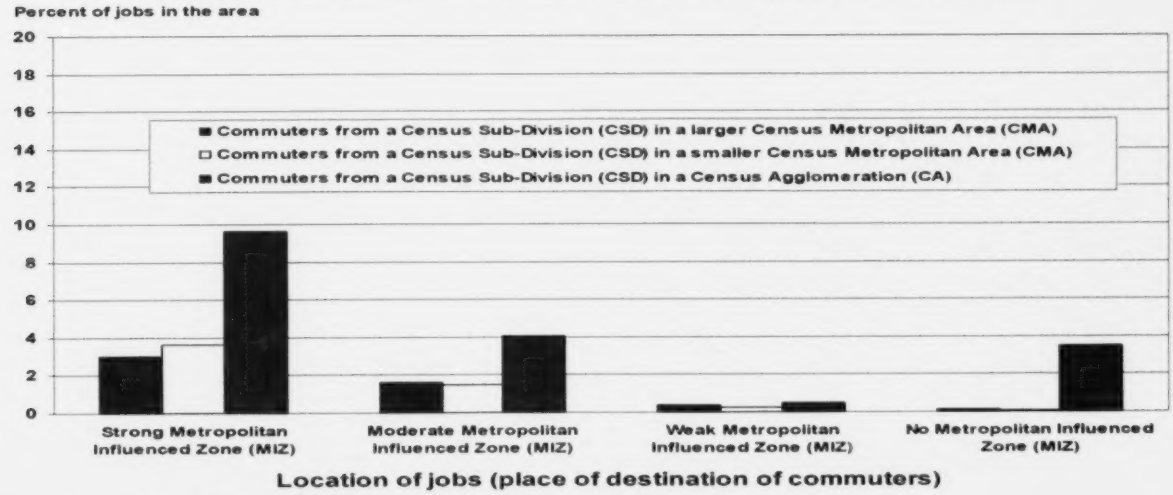
Note: A Census Sub-Division (CSD) is an incorporated town or municipality. See Box 2 for a definition of commuting.
Source: Statistics Canada, Census of Population, 2001.

Figure 8 In-commuting into rural labour markets: About 15% of the jobs in Moderate Metropolitan Influenced Zone (MIZ) Census Sub-Divisions (CSDs) are filled by in-commuters from other Moderate Metropolitan Influenced Zone (MIZ) Census Sub-Divisions (CSDs), Canada, 2001



Note: A Census Sub-Division (CSD) is an incorporated town or municipality. See Box 2 for a definition of commuting.
Source: Statistics Canada, Census of Population, 2001.

Figure 9 Urban commuting into rural labour markets: In most types of rural Census Sub-Divisions (CSDs), over half the commuters from a larger urban centre (LUC) Census Sub-Division (CSD) were commuting from a Census Agglomeration (CA), Canada, 2001



Note: A Census Sub-Division (CSD) is an incorporated town or municipality. See Box 2 for a definition of commuting.
Source: Statistics Canada, Census of Population, 2001.

Conclusions

This analysis is a first attempt to account for the multidirectional nature of commuter flows, with a specific focus on rural commuting flows across Canada. Understanding the direction and magnitude of these flows has implications for the labour force residing in a rural and small town community as well as for the labour market of rural communities.

Commuting is, to a large extent, an urban phenomenon. Given the existing distribution of population and jobs, it is not surprising that close to 80% of commuting takes place between municipalities within larger urban centres (LUCs). The existing research on commuting within CMAs indicates that, even in these areas, commuting patterns are becoming increasingly complex with growing core-to-periphery and periphery-to-periphery flows.

This analysis found that, similar to urban commuting, rural commuting is also more complex than commonly believed. Any analysis of commuting that concentrates on the flows from the (rural) periphery to the (urban) core overlooks half of rural commuting, which is rural-to-rural. For commuters residing in RST areas, rural-to-rural commuting is as large as the rural-to-urban commuting. Moreover, rural jobs are over twice as reliant on in-commuting rural workers as they are on in-commuting urban workers. Rural-to-rural linkages appear particularly strong in RST areas beyond Strong MIZ.

Overlooking these rural-to-rural commuting flows has clear implications. It limits understanding of the economic linkages among rural communities and the degree of integration of rural labour markets.

In addition to exposing the extent of rural-to-rural commuting, this analysis has provided evidence that Statistics Canada's definition of larger urban centres (CMA and CA) is particularly appropriate. CMAs and CAs seem to successfully delineate self-contained labour markets. Only 4% of jobs in larger urban centres are filled by commuters from RST areas (these workers represent 16% of workers residing in RST areas).

This analysis has also corroborated the fact that RST areas classified as Strong MIZ accurately constitute the dividing belt between LUCs and RST areas. In this sense, the prevailing MIZ classification appears appropriate.

The pattern of rural-to-rural commuting has been labelled by Persson et al. (1997) as the 'arena society' to emphasize the fact that different functions – residence, recreation, and work – are increasingly disjointed over space and may each involve a commute in a different direction.

At the regional scale, the analysis of commuting flows is a precondition for the identification of functional areas that present strong economic linkages and share a common pool of labour. These areas form an important territorial unit of analysis as well as a focus for the delivery of policy. The research challenge ahead is to provide a better delineation of rural labour markets which can complement the information captured by the prevailing MIZ classification. Clearly some rural areas are strongly connected to urban labour markets; however, most of the rural communities and half of the rural commuters are dependent on other rural labour markets.

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Appendix

Table A1 Number of census sub-divisions in each geographic group, Canada, 2001

Statistical area classification	Census Sub-Divisions	Census Sub-Divisions in our study[1]	
	number	number	percent
Larger urban centres	**995**	**851**	**85.5**
Larger Census Metropolitan Area	288	266	92.4
Smaller Census Metropolitan Area	221	196	88.7
Census Agglomeration	486	389	80
Rural and small town areas	**4,605**	**2,939**	**63.8**
Strong metropolitan influenced zone	663	548	82.7
Moderate metropolitan influenced zone	1,388	1,180	85
Weak metropolitan influenced zone	1,016	821	80.8
No metropolitan influenced zone	1,538	390	25.4
Canada	**5,600**	**3,790**	**67.7**

1. with 20 or more workers, maximum distance 250 km

Note: A Census Sub-Division (CSD) is an incorporated town or municipality. See Box 2 for a definition of commuting and the criteria for including a Census Sub-Division(CSD). In this study, the classification of Census Metropolitan Area (CMA) and Census Agglomeration (CA) is based on total population of the agglomeration. Any agglomeration with total population greater than 100,000 is classified as CMA; hence, the category 'Smaller Census Metropolitan Area (CMA)' includes 7 Census Agglomerations (CAs) with an urban core population less than 100,000 but a total population greater than 100,000. For practical purposes, 16 non-Census Agglomeration (CA) Census Sub-Divisions (CSDs) in the Territories, with small commuting flows to a Census Agglomeration (CA) in the Territories, were assigned to the Strong Metropolitan Influenced Zone (MIZ) class.

Source: Authors' computations based on Statistics Canada, Census of Population, 2001.

Table A2 Commuting and job location by type of region, Canada, 2001

Statistical area classification	Total out-commuters	Total in-commuters	Workers who live and work in the same Census Sub-Division	Total workers at their place of residence
		number		
Larger urban centres	**3,929,690**	**4,209,555**	**7,987,510**	**11,917,200**
Larger Census Metropolitan Area	2,773,135	3,000,595	4,934,865	7,708,000
Smaller Census Metropolitan Area	696,915	693,025	1,779,560	2,476,475
Census Agglomeration	459,640	515,935	1,273,085	1,732,725
Rural and small town areas	**890,605**	**610,740**	**1,887,325**	**2,777,930**
Strong metropolitan influenced zone	369,895	128,910	376,180	746,075
Moderate metropolitan influenced zone	311,270	235,420	693,800	1,005,070
Weak metropolitan influenced zone	188,065	222,035	692,830	880,895
No metropolitan influenced zone	21,375	24,375	124,515	145,890
All areas	**4,820,295**	**4,820,295**	**9,874,835**	**14,695,130**

Note: For the definition of commuting used in this analysis see Box 2.

Source: Authors' computations based on Statistics Canada, Census of Population, 2001.

Table A3 Regional matrix of commuting flows, Canada, 2001

From Place of residence	Commuters to Place of work							
	Larger urban areas			Rural and small town areas				
	Larger Census Metropolitan Area	Smaller Census Metropolitan Area	Census Agglomeration	Strong Metropolitan Influenced Zone	Moderate Metropolitan Influenced Zone	Weak Metropolitan Influenced Zone	No Metropolitan Influenced Zone	Total commuters at their place of residence
	number							
Larger Census Metropolitan Area	2,692,075	31,725	15,935	15,255	14,810	3,130	205	2,773,135
Smaller Census Metropolitan Area	123,040	517,885	21,740	18,270	13,410	2,480	90	696,915
Census Agglomeration	39,240	45,650	278,660	48,540	37,840	4,485	5,225	459,640
Strong Metropolitan Influenced Zone	108,345	66,620	130,380	32,335	29,385	2,735	95	369,895
Moderate Metropolitan Influenced Zone	35,085	28,640	63,080	13,825	111,835	54,980	3,825	311,270
Weak Metropolitan Influenced Zone	2,705	2,270	4,730	535	25,870	139,735	12,220	188,065
No Metropolitan Influenced Zone	105	235	1,410	150	2,270	14,490	2,715	21,375
Total commuters at their place of work	3,000,595	693,025	515,935	128,910	235,420	222,035	24,375	4,820,295

Note: This table is a matrix of commuter flows from the place of residence (row) to the place of work (column). It includes those commuting between Census Sub-Divisions (CSDs) in the same type of area. For instance, there are 517,885 individuals commuting from a Census Sub-Division (CSD) located in a Smaller Census Metropolitan Area (CMA) to another Census Sub-Division (CSD) within a Smaller Census Metropolitan Area (CMA). For the definition of commuting used in this analysis see Box 2.

Source: Authors' computations based on Statistics Canada, Census of Population, 2001.

Table A4 Out-commuters from each type of place of residence, showing their distribution by place of work, Canada, 2001

From Place of residence	To Place of work								
	Larger urban areas				Rural and small town areas				
	All Large Urban Centre	Larger Census Metropolitan Area	Smaller Census Metropolitan Area	Census Agglomeration	All Rural and Small Town	Strong Metropolitan Influenced Zone	Moderate Metropolitan Influenced Zone	Weak Metropolitan Influenced Zone	No Metropolitan Influenced Zone	Total out-commuters
	percent									
Larger urban centres	**95.8**	**72.6**	**15.1**	**8.0**	**4.2**	**2.1**	**1.7**	**0.3**	**0.1**	**100.0**
Larger Census Metropolitan Area	98.8	97.1	1.1	0.6	1.2	0.6	0.5	0.1	0.0	100.0
Smaller Census Metropolitan Area	95.1	17.7	74.3	3.1	4.9	2.6	1.9	0.4	0.0	100.0
Census Agglomeration	79.1	8.5	9.9	60.6	20.9	10.6	8.2	1.0	1.1	100.0
Rural and small town areas	**49.8**	**16.4**	**11.0**	**22.4**	**50.2**	**5.3**	**19.0**	**23.8**	**2.1**	**100.0**
Strong Metropolitan Influenced Zone	82.5	29.3	18.0	35.2	17.5	8.7	7.9	0.7	0.0	100.0
Moderate Metropolitan Influenced Zone	40.7	11.3	9.2	20.3	59.3	4.4	35.9	17.7	1.2	100.0
Weak Metropolitan Influenced Zone	5.2	1.4	1.2	2.5	94.8	0.3	13.8	74.3	6.5	100.0
No Metropolitan Influenced Zone	8.2	0.5	1.1	6.6	91.8	0.7	10.6	67.8	12.7	100.0
All areas	**87.3**	**62.2**	**14.4**	**10.7**	**12.7**	**2.7**	**4.9**	**4.6**	**0.5**	**100.0**

Note: This table shows the percent distribution of out-commuters from a place of residence to a place of work, as a total of out-commuters in each place of residence. The sum of each row is equal to 100%.

Source: Authors' computations based on Statistics Canada, Census of Population, 2001.

Table A5 Total workers for each type of place of residence, showing their distribution by place of work, Canada, 2001

From Place of residence	To Place of work											
	Larger urban areas				Rural and small town areas							
	All Large Urban Centre	Larger Census Metropolitan Area	Smaller Census Metropolitan Area	Census Agglomeration	All Rural and Small Town	Strong Metropolitan Influenced Zone	Moderate Metropolitan Influenced Zone	Weak Metropolitan Influenced Zone	No Metropolitan Influenced Zone	Total out-commuters	Live and work in the same Census Sub-Division	Total
	percent											
Larger urban centres	**31.6**	**24.0**	**5.0**	**2.7**	**1.4**	**0.7**	**0.6**	**0.1**	**0.0**	**33.0**	**67.0**	**100.0**
Larger Census Metropolitan Area	35.5	34.9	0.4	0.2	0.4	0.2	0.2	0.0	0.0	36.0	64.0	100.0
Smaller Census Metropolitan Area	26.8	5.0	20.9	0.9	1.4	0.7	0.5	0.1	0.0	28.1	71.9	100.0
Census Agglomeration	21.0	2.3	2.6	16.1	5.5	2.8	2.2	0.3	0.3	26.5	73.5	100.0
Rural and small town areas	**16.0**	**5.3**	**3.5**	**7.2**	**16.1**	**1.7**	**6.1**	**7.6**	**0.7**	**32.1**	**67.9**	**100.0**
Strong Metropolitan Influenced Zone	40.9	14.5	8.9	17.5	8.7	4.3	3.9	0.4	0.0	49.6	50.4	100.0
Moderate Metropolitan Influenced Zone	12.6	3.5	2.8	6.3	18.4	1.4	11.1	5.5	0.4	31.0	69.0	100.0
Weak Metropolitan Influenced Zone	1.1	0.3	0.3	0.5	20.2	0.1	2.9	15.9	1.4	21.3	78.7	100.0
No Metropolitan Influenced Zone	1.2	0.1	0.2	1.0	13.5	0.1	1.6	9.9	1.9	14.7	85.3	100.0
All areas	**28.6**	**20.4**	**4.7**	**3.5**	**4.2**	**0.9**	**1.6**	**1.5**	**0.2**	**32.8**	**67.2**	**100.0**

Note: This table shows the percent distribution of out-commuters from a place of residence to a place of work and the workers who do not commute, as a percent of total workers (commuters and non commuters) at each place of residence. The sum of each row is equal to 100%.

Source: Authors' computations based on Statistics Canada, Census of Population, 2001.

Table A6 For each place of work, percent distribution of commuters by place of residence, Canada, 2001

From Place of residence	Proportion of in-commuters to place of work									
	Larger urban areas				Rural and small town areas					
	All Large Urban Centre	Larger Census Metropolitan Area	Smaller Census Metropolitan Area	Census Agglomeration	All Rural and Small Town	Strong Metropolitan Influenced Zone	Moderate Metropolitan Influenced Zone	Weak Metropolitan Influenced Zone	No Metropolitan Influenced Zone	All areas
	percent									
Larger urban centres	**89.5**	**95.1**	**85.9**	**61.3**	**26.8**	**63.7**	**28.1**	**4.5**	**22.6**	**81.5**
Larger Census Metropolitan Area	65.1	89.7	4.6	3.1	5.5	11.8	6.3	1.4	0.8	57.5
Smaller Census Metropolitan Area	15.7	4.1	74.7	4.2	5.6	14.2	5.7	1.1	0.4	14.5
Census Agglomeration	8.6	1.3	6.6	54.0	15.7	37.7	16.1	2.0	21.4	9.5
Rural and small town areas	**10.5**	**4.9**	**14.1**	**38.7**	**73.2**	**36.3**	**71.9**	**95.5**	**77.4**	**18.5**
Strong Metropolitan Influenced Zone	7.3	3.6	9.6	25.3	10.6	25.1	12.5	1.2	0.4	7.7
Moderate Metropolitan Influenced Zone	3.0	1.2	4.1	12.2	30.2	10.7	47.5	24.8	15.7	6.5
Weak Metropolitan Influenced Zone	0.2	0.1	0.3	0.9	29.2	0.4	11.0	62.9	50.1	3.9
No Metropolitan Influenced Zone	0.0	0.0	0.0	0.3	3.2	0.1	1.0	6.5	11.1	0.4
Total in-commuters	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Note: This table shows the percent distribution of in-commuters from a place of residence *to* a place of work, as a percent of total in-commuters at each place of work. The sum of each column is equal to 100%.

Source: Authors' computations based on Statistics Canada, Census of Population, 2001.

Table A7 For each place of work, percent distribution of workers by place of residence, Canada, 2001

From Place of residence	To place of work									
	Larger urban areas				Rural and small town areas					
	All Large Urban Centre	Larger Census Metropolitan Area	Smaller Census Metropolitan Area	Census Agglomeration	All Rural and Small Town	Strong Metropolitan Influenced Zone	Moderate Metropolitan Influenced Zone	Weak Metropolitan Influenced Zone	No Metropolitan Influenced Zone	All areas
	percent									
Larger urban centres	**30.9**	**36.0**	**24.1**	**17.7**	**6.6**	**16.2**	**7.1**	**1.1**	**3.7**	**26.7**
Larger Census Metropolitan Area	22.5	33.9	1.3	0.9	1.3	3.0	1.6	0.3	0.1	18.9
Smaller Census Metropolitan Area	5.4	1.6	20.9	1.2	1.4	3.6	1.4	0.3	0.1	4.7
Census Agglomeration	3.0	0.5	1.8	15.6	3.8	9.6	4.1	0.5	3.5	3.1
Rural and small town areas	**3.6**	**1.8**	**4.0**	**11.2**	**17.9**	**9.3**	**18.2**	**23.2**	**12.7**	**6.1**
Strong Metropolitan Influenced Zone	2.5	1.4	2.7	7.3	2.6	6.4	3.2	0.3	0.1	2.5
Moderate Metropolitan Influenced Zone	1.0	0.4	1.2	3.5	7.4	2.7	12.0	6.0	2.6	2.1
Weak Metropolitan Influenced Zone	0.1	0.0	0.1	0.3	7.1	0.1	2.8	15.3	8.2	1.3
No Metropolitan Influenced Zone	0.0	0.0	0.0	0.1	0.8	0.0	0.2	1.6	1.8	0.1
Total commuters at their place of work	34.5	37.8	28.0	28.8	24.4	25.5	25.3	24.3	16.4	32.8
Live and work in the same CSD	65.5	62.2	72.0	71.2	75.6	74.5	74.7	75.7	83.6	67.2
Total workers	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Note: This table shows the percent distribution of in-commuters from a place of residence to a place of work and workers at place of work, as a percent of total workers at each place of work. The sum of each column is equal to 100%.

Source: Authors' computations based on Statistics Canada, Census of Population, 2001

Table A8 For each place of residence, percent distribution of male commuters by place of work, Canada, 2001

From Place of residence	Out-commuters to place of work							
	Larger urban areas			Rural and small town areas				
	Larger Census Metropolitan Area	Smaller Census Metropolitan Area	Census Agglomeration	Strong Metropolitan Influenced Zone	Moderate Metropolitan Influenced Zone	Weak Metropolitan Influenced Zone	No Metropolitan Influenced Zone	All areas
	percent							
Larger Census Metropolitan Area	**96.7**	1.3	0.6	0.6	0.6	0.1	0.0	100.0
Smaller Census Metropolitan Area	20.2	**71.2**	3.2	2.8	2.1	0.4	0.0	100.0
Census Agglomeration	9.9	10.9	**55.1**	12.2	9.0	1.3	1.7	100.0
Strong Metropolitan Influenced Zone	32.1	18.5	32.2	**8.6**	7.9	0.7	0.0	100.0
Moderate Metropolitan Influenced Zone	12.8	10.1	19.2	4.7	**35.5**	16.5	1.2	100.0
Weak Metropolitan Influenced Zone	1.8	1.5	2.8	0.3	14.3	**73.0**	6.3	100.0
No Metropolitan Influenced Zone	0.5	0.9	6.9	1.1	9.3	68.8	**12.5**	100.0

Source: Statistics Canada, Census of Population, 2001.

Table A9 For each place of residence, percent distribution of female commuters by place of work, Canada, 2001

From Place of residence	Out-commuters to Place of work							All areas
	Larger urban areas			Rural and small town areas				
	Larger Census Metropolitan Area	Smaller Census Metropolitan Area	Census Agglomeration	Strong Metropolitan Influenced Zone	Moderate Metropolitan Influenced Zone	Weak Metropolitan Influenced Zone	No Metropolitan Influenced Zone	
	percent							
Larger Census Metropolitan Area	**97.5**	1.0	0.5	0.5	0.4	0.1	0.0	100.0
Smaller Census Metropolitan Area	14.5	**78.1**	3.0	2.3	1.7	0.2	0.0	100.0
Census Agglomeration	7.0	8.8	**67.4**	8.5	7.3	0.6	0.4	100.0
Strong Metropolitan Influenced Zone	26.3	17.5	38.5	**9.0**	8.1	0.7	0.0	100.0
Moderate Metropolitan Influenced Zone	9.6	8.2	21.4	4.2	**36.4**	18.9	1.3	100.0
Weak Metropolitan Influenced Zone	1.1	1.0	2.2	0.3	13.3	**75.5**	6.7	100.0
No Metropolitan Influenced Zone	0.5	1.3	6.3	0.4	11.7	66.7	**13.1**	100.0

Source: Statistics Canada, Census of Population, 2001.

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